R307. Environmental Quality, Air Quality.
R307-410. Permits:
R307-410-1. Purpose.

This rule establishes the procedures and requirements for evaluating the emissions impact of new or modified sources that require an approval order under R307-401 to ensure that the source will not interfere with the attainment or maintenance of any NAAQS as required by 40 CFR 51.160. The rule also establishes the procedures and requirements for evaluating the emissions impact of hazardous air pollutants. The rule also establishes the procedures for establishing an emission rate based on the good engineering practice stack height as required by 40 CFR 51.118.

R307-410-2. Definitions.

(1) The following additional definitions apply to R307-410.

"Vertically Restricted Emissions Release" means the release of an air contaminant through a stack or opening whose flow is directed in a downward or horizontal direction due to the alignment of the opening or a physical obstruction placed beyond the opening, or at a height which is less than 1.3 times the height of an adjacent building or structure, as measured from ground level.

"Vertically Unrestricted Emissions Release" means the release of an air contaminant through a stack or opening whose flow is directed upward without any physical obstruction placed beyond the opening, and at a height which is at least 1.3 times the height of an adjacent building or structure, as measured from ground level.

(2) Except as provided in (3) below, the definitions of “stack”, “stack in existence”, “dispersion technique”, “good engineering practice (GEP) stack height”, “nearby”, “excessive concentration”, and “intermittent control system (ICS)” in 40 CFR 51.100(ff) through (kk) and (nn) effective July 1, 2005 are hereby incorporated by reference.

(3)—(a) The terms “reviewing authority” and “authority administering the State implementation plan” shall mean the executive secretary.

(b) The reference to “40 CFR parts 51 and 52” in 40 CFR 51.100(ii)(2)(i) shall be changed to “R307-401, R307-403 and R307-405”.

(c) The phrase “For sources subject to the prevention of significant deterioration program (40 CFR 51.166 and 52.21)” in 40 CFR 51.100(kk)(1) shall be replaced with the

phrase “For sources subject to R307-401, R307-403, or R307-405”.[

~~"Dispersion Technique" means any technique which attempts to affect the concentration of a pollutant in the ambient air by:~~

~~(1) Using that portion of a stack which exceeds good engineering practice stack height;~~

~~(2) Varying the rate of emission of a pollutant according to atmospheric conditions or ambient concentrations of that pollutant; or~~

~~(3) Increasing final exhaust gas plume rise by manipulating source process parameters, exhaust gas parameters, stack parameters, or combining exhaust gases from several existing stacks into one stack; or other selective handling of exhaust gas streams so as to increase the exhaust gas plume rise. The techniques described in this definition do not include:~~

~~(a) The reheating of a gas stream following the use of a pollution control system, for the purpose of returning the gas to the temperature at which it was originally discharged from the facility generating the gas stream;~~

~~(b) The merging of exhaust gas streams where:~~

~~(i) The source owner or operator demonstrates that the facility was originally designed and constructed with such merged gas streams;~~

~~(ii) After July 8, 1985, such merging is part of a change in operation at the facility that includes the installation of pollution controls and is accompanied by a net reduction in the allowable emissions of a pollutant. This exclusion from the definition of "dispersion techniques" shall apply only to the emission limitation for the pollutant affected by such change in operation; or~~

~~(iii) Before July 8, 1985, such merging was part of a change in operation at the facility that included the installation emissions control equipment or was carried out for sound economic or engineering reasons. Where there was an increase in the emission limitation or, in the event that no emission limitation was in existence prior to the merging, an increase in the quantity of pollutants actually emitted prior to the merging, the Air Quality Board shall presume that merging was significantly motivated by an intent to gain emissions credit for greater dispersion. Absent a demonstration by the source owner or operator that merging was not significantly motivated by such intent, the Air Quality Board shall deny credit for the effects of such merging in calculating the allowable emissions for the source;~~

~~(c) Smoke management in agricultural or silvicultural prescribed burning programs;~~

~~(id) Episodic restrictions on residential wood-burning and open burning; or~~

~~(e) Techniques under (c) which increase final exhaust gas plume rise where the resulting allowable emissions of sulfur dioxide from the facility do not exceed 5,000 tons per year.~~

~~"Excessive Concentration" is defined for the purpose of determining good engineering practice stack height under alternative (c) of the "Good Engineering Practice (GEP) Stack Height" definition and means:~~

~~(1) for sources seeking credit for stack height exceeding that established under alternative (b) of the "Good Engineering Practice (GEP) Stack Height" definition, a maximum ground-level concentration due to emissions from a stack due in whole or in part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least 40 percent in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects and which contributes to a total concentration due to emissions from all sources that is greater than an ambient air quality standard. For sources subject to the prevention of significant deterioration program in R307-405, an excessive concentration alternatively means a maximum ground-level concentration due to emissions from a stack due in whole or in part to downwash, wakes, or eddy effects produced by nearby structures or nearby terrain features which individually is at least 40 percent in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects and greater than a prevention of significant deterioration increment. The allowable emission rate to be used in making demonstrations under R307-410-5 shall be prescribed by the state approval order or the federal new source performance standard that is applicable to the source category, whichever is more stringent, unless the owner or operator demonstrates that this emission rate is infeasible. Where such demonstrations are approved by the Executive Secretary, an alternative emission rate shall be established in consultation with the source owner or operator. The allowable emission rate to be used in making demonstrations under R307-410-5 for sources for which no federal new source performance standard or state approval order has been issued shall be established by the Executive Secretary in consultation with the source owner or operator.~~

~~(2) for sources seeking credit after October 11, 1983, for increases in existing stack heights up to the heights established under alternative (b) of the "Good Engineering Practice (GEP) Stack Height" definition either,~~

~~(a) a maximum ground-level concentration due in whole or part to downwash, wakes or eddy affects as provided in alternative (a) of the definition of "Excessive Concentration", except that the emission rate specified by any applicable State implementation plan (or, in the absence of such a limit, the actual emission rate) shall be used, or~~

~~(b) the actual presence of a local nuisance caused by the existing stack, as determined by the authority administering the State implementation plan.~~

~~(3) for sources seeking credit after January 12, 1983, for a stack height determined under alternative (b) of the "Good Engineering Practice (GEP) Stack Height" definition where the Executive Secretary requires the use of a field study or fluid model to verify GEP stack height, for sources seeking stack height credit after November 9, 1984, based on the aerodynamic influence of cooling towers, and for sources seeking stack height credit after December 31, 1970, based on the aerodynamic influence of structures not adequately represented by the equations in alternative (b) of the "Good Engineering Practice (GEP) Stack Height" definition, a maximum ground-level concentration due in whole or in part to downwash, wakes, or eddy effects that is at least 40 percent in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects.~~

~~"Good Engineering Practice (GEP) Stack Height" means the greater of:~~

~~(1) Sixty-five (65) meters, measured from the ground-level elevation at the base of the stack;~~

~~(2) Where H_g=good engineering practice stack height measured from the ground-level elevation at the base of the stack; H=height of nearby structure(s) measured from the ground-level elevation at the base of the stack; L=lesser dimension (height or projected width) of nearby structure(s), and provided that the Executive Secretary may require the use of a field study or fluid model to verify GEP stack height for the source:~~

~~(a) for stacks in existence on January 12, 1979, and for which the owner or operator had obtained all required air quality permits or approvals, $H_g = 2.5L$ provided the owner or operator produces evidence that this equation was actually relied on in establishing an emission limitation;~~

~~(b) for all other stacks, H_g = H+1.5L; or~~
~~(3) The height demonstrated by a fluid model or a field study approved by the Executive secretary, which ensures that the emissions from the stack do not result in excessive concentrations of air contaminants as a result of atmospheric downwash, wakes, or eddy effects created by the source itself, nearby structures or nearby terrain features.~~
~~"Nearby" as used in subpart (b) of the definition "Good Engineering Practice (GEP) Stack Height" is defined for a specific structure or terrain feature and~~
~~(1) for the purpose of applying the formulae provided in subpart (a) of the definition "Good Engineering Practice (GEP) Stack Height", means that distance up to five times the lesser of the height or the width dimension of a structure, but not to be greater than 1/2 mile, and~~
~~(2) for conducting demonstrations using subpart (c) of the definition "Good Engineering Practice (GEP) Stack Height", means not greater than 1/2 mile, except that the portion of terrain feature may be considered to be nearby which falls within a distance of up to 10 times the maximum height of the feature, not to exceed 2 miles if such a feature achieves a height 1/2 mile from the stack that is at least 40 percent of the GEP stack height determined by the formulae provided in subpart (b)(ii) of the definition "Good Engineering Practice (GEP) Stack Height" of this part or 26 meters, whichever is greater, as measured from the ground-level elevation at the base of the stack. The height of the structure or terrain feature is measured from the ground-level elevation at the base from the stack.~~
~~"Stack in Existence" means that the owner or operator had~~
~~(1) begun, or caused to begin, a continuous program of physical on-site construction of the stack, or~~
~~(2) entered into binding agreements or contractual obligations, which could not be canceled or modified without substantial loss to the owner or operator, to undertake a program of construction of the stack to be completed in a reasonable time.]~~

R307-410-[~~2~~]3. Use of Dispersion Models.

All estimates of ambient concentrations derived in meeting the requirements of R307 shall be based on appropriate air quality models, data bases, and other requirements specified in 40 CFR Part 51, Appendix W, (Guideline on Air Quality Models), effective July 1, 2005, which is hereby incorporated by reference. Where an air

quality model specified in the Guideline on Air Quality Models or other EPA approved guidance documents is inappropriate, the [~~E~~]executive [~~S~~]secretary may authorize the modification of the model or substitution of another model. In meeting the requirements of federal law, any modification or substitution will be made only with the written approval of the Administrator, EPA.

R307-410-[~~3~~]4. Modeling of Criteria Pollutant Impacts in Attainment Areas.

Prior to receiving an approval order under R307-401, a new source in an attainment area with a total controlled emission rate per pollutant greater than or equal to amounts specified in Table 1, or a modification to an existing source located in an attainment area which increases the total controlled emission rate per pollutant of the source in an amount greater than or equal to those specified in Table 1, shall conduct air quality modeling, as identified in R307-410-[~~2~~]3, to estimate the impact of the new or modified source on air quality unless previously performed air quality modeling for the source indicates that the addition of the proposed emissions increase would not violate a National Ambient Air Quality Standard[~~ or a Prevention of Significant Deterioration increment~~], as determined by the Executive Secretary.

TABLE 1

POLLUTANT	EMISSIONS
sulfur dioxide	40 tons per year
oxides of nitrogen	40 tons per year
PM10 - fugitive emissions and fugitive dust	5 tons per year
PM10 - non-fugitive emissions or non-fugitive dust	15 tons per year
carbon monoxide	100 tons per year[~~As required under R307-405-6(2)~~]
lead	0.6 tons per year

R307-410-[4]5. Documentation of Ambient Air Impacts for Hazardous Air Pollutants.

(1) Prior to receiving an approval order under R307-401, a source shall provide documentation of increases in emissions of hazardous air pollutants as required under (c) below for all installations not exempt under (a) below.

(a) Exempted Installations.

(i) The requirements of R307-410-[4]5 do not apply to installations which are subject to or are scheduled to be subject to an emission standard promulgated under 42 U.S.C. 7412 at the time a notice of intent is submitted, except as defined in (ii) below. This exemption does not affect requirements otherwise applicable to the source, including requirements under R307-401.

(ii) The executive secretary may, upon making a written determination that the delay in the implementation of an emission standard under R307-214-2, that incorporates 40 CFR Part 63, might reasonably be expected to pose an unacceptable risk to public health, require, on a case-by-case basis, notice of intent documentation of emissions consistent with (c) below.

(A) The executive secretary [~~shall~~]will notify the source in writing of the preliminary decision to require some or all of the documentation listed in (c) below.

(B) The source may respond in writing within thirty days of receipt of the notice, or such longer period as the executive secretary approves.

(C) In making a final determination, the executive secretary [~~shall~~]will document objective bases for the determination, which may include public information and studies, documented public comment, the applicant's written response, the physical and chemical properties of emissions, and ambient monitoring data.

(b) Lead Compounds Exemption. The requirements of R307-410-[4]5 do not apply to emissions of lead compounds. Lead compounds shall be evaluated pursuant to requirements of R307-410-[~~3~~]4.

(c) Submittal Requirements.

(i) Each applicant's notice of intent shall include:

(A) the estimated maximum pounds per hour emission rate increase from each affected installation,

(B) the type of release, whether the release flow is vertically restricted or unrestricted, the maximum release duration in minutes per hour, the release height measured from the ground, the height of any adjacent building or structure, the shortest distance between the release point and any area defined as "ambient air" under 40 CFR 50.1(e), effective July 1, 2005, which is hereby incorporated by reference for each installation for which the source proposes an emissions increase,

(C) the emission threshold value, calculated to be the applicable threshold limit value - time weighted average (TLV-TWA) or the threshold limit value - ceiling (TLV-C) multiplied by the appropriate emission threshold

factor listed in Table 2, except in the case of arsenic, benzene, beryllium, and ethylene oxide which shall be calculated using chronic emission threshold factors, and formaldehyde, which shall be calculated using an acute emission threshold factor. For acute hazardous air pollutant releases having a duration period less than one hour, this maximum pounds per hour emission rate shall be consistent with an identical operating process having a continuous release for a one-hour period.

TABLE 2
EMISSION THRESHOLD FACTORS FOR HAZARDOUS AIR POLLUTANTS
(cubic meter pounds per milligram hour)

VERTICALLY-RESTRICTED AND FUGITIVE EMISSION RELEASE POINTS

DISTANCE TO PROPERTY BOUNDARY	ACUTE	CHRONIC	CARCINOGENIC
20 Meters or less	0.038	0.051	0.017
21 - 50 Meters	0.051	0.066	0.022
51 - 100 Meters	0.092	0.123	0.041
Beyond 100 Meters	0.180	0.269	0.090

VERTICALLY-UNRESTRICTED EMISSION RELEASE POINTS

DISTANCE TO PROPERTY BOUNDARY	ACUTE	CHRONIC	CARCINOGENIC
50 Meters or less	0.154	0.198	0.066
51 - 100 Meters	0.224	0.244	0.081
Beyond 100 Meters	0.310	0.368	0.123

(ii) A source with a proposed maximum pounds per hour emissions increase equal to or greater than the emissions threshold value shall include documentation of a comparison of the estimated ambient concentration of the proposed emissions with the applicable toxic screening level specified in (d) below.

(iii) A source with an estimated ambient concentration equal to or greater than the toxic screening level shall provide additional documentation regarding the impact of the proposed emissions. The executive secretary may require such documentation to include, but not be limited to:

(A) a description of symptoms and adverse health effects that can be caused by the hazardous air pollutant,

(B) the exposure conditions or dose that is sufficient to cause the adverse health effects,

(C) a description of the human population or other biological species which could be exposed to the estimated concentration,

(D) an evaluation of land use for the impacted areas,

(E) the environmental fate and persistency.

(d) Toxic Screening Levels and Averaging Periods.

(i) The toxic screening level for an acute hazardous air pollutant is 1/10th the value of the TLV-C, and the applicable averaging period shall be:

(A) one hour for emissions releases having a duration period of one hour or greater,

(B) one hour for emission releases having a duration period less than one hour if the emission rate used in the model is consistent with an identical operating process having a continuous release for a one-hour period or more, or

(C) the dispersion model's shortest averaging period when using an applicable model capable of estimating ambient concentrations for periods of less than one hour.

(ii) The toxic screening level for a chronic hazardous air pollutant is 1/30th the value of the TLV- TWA, and the applicable averaging period shall be 24 hours.

(iii) The toxic screening level for all carcinogenic hazardous air pollutants is 1/90 the value of the TLV-TWA, and the applicable averaging period shall be 24 hours, except in the case of formaldehyde which shall be evaluated consistent with (d)(i) above and arsenic, benzene, beryllium, and ethylene oxide which shall be evaluated consistent with (d)(ii) above.

R307-410-[~~5~~]6. Stack Heights and Dispersion Techniques.

(1) The degree of emission limitation required of any source for control of any air contaminant to include determinations made under R307-401, R307-403 and R307-405, must not be affected by so much of any source's stack height that exceeds good engineering practice or by any other dispersion technique except as provided in (2) below. This does not restrict, in any manner, the actual stack height of any source.

(2) The provisions in R307-410-[~~5~~]6 shall not apply to:

(a) stack heights in existence, or dispersion techniques implemented on or before December 31, 1970, except where pollutants are being emitted from such stacks or using such dispersion techniques by sources which were constructed or reconstructed, or for which major modifications were carried out after December 31, 1970; or

(b) coal-fired steam electric generating units subject to the provisions of Section 118 of the Clean Air Act, which commenced operation before July 1, 1957, and whose stacks were constructed under a construction contract awarded before February 8, 1974.

(3) The [~~E~~]executive [~~S~~]secretary may require the source owner or operator to provide a demonstration that the source stack height meets good engineering practice as required by R307-410-[~~5~~]6.

KEY: air pollution, modeling, hazardous air pollutant[*], stack height[*]
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